CP/TF/01

## TEST REPORT OF PHYSICAL PROPERTIES OF CEMENT - 53 Grade

**Lab ID** : **CP-2017-06-26-11**

**Date: 27-06-2017**

**Customer** : Executive Engineer, Project Division, Yelahanka Zone, BBMP, Bangalore.

**Address** : Yelahanka Sub Division, BBMP, Bangalore.

**Project Name** : Providing Structural roof covering (By space frames) over gallery to Hoysala play ground behind Yelahanka New town Bus stand in Ward no.04

**Agency** : H. V. Onkarappa, #27, Taralabalu Enclave, Near Police Station, Bangalore-64

**Customer's Reference** : EE(Project)/Ynk Zone/WO/35/16-17

**Source of Sample** : Sample supplied by Agency

**Sample Condition** : Satisfactory

**Date of Receipt** : 26-06-2017

**Sample ID No** : 2017-06-26-11/01

**Sample Type** : Birla Super 53grade

**Reference to BIS codes** : IS 12269 : 2013, 53 Grade Ordinary Portland cement Specification ,
IS 4031 (Part 1,2 3,4,5, 6,11):1988
IS 4031 Part 1 DETERMINATION OF FINENESS BY DRY SIEVING, Clause 4.4
IS 4031 Part 2, Determination of Fineness by Blaine Air Permeability Method, Clause 5
IS 4031 Part 3, Determination of Soundness, Clause 5,Clause 6
IS 4031 Part 4, Determination of Consistency of Standard Cement Paste, Clause 5
IS 4031 Part 5, Determination of Initial & Final Setting Time, Clause 5
IS 4031 Part 11,DETERMINATION OF DENSITY , Clause 6

**Date of test** : 26-06-2017

| Sl.No. | Physical properties | Results | Requirement as per IS 12269: 2013 |
|---|---|---|---|
| 1 | Fineness by dry sieving (%) | 2.34 | – |
| 2 | Finess by Air permeablity method ($m^2$/kg, Min) | 263.5 | 225$m^2$/kg, Min |
| 3 | Density (gm/cc) | 3.15 | – |
| 4 | Standard Consistency (%) | 28.5% | Not specified |
| 5 | Initial Setting time | 165 minutes | Not less than 30 minutes |
| 6 | Final Setting time | 260 minutes | Not more than 600 minutes |
| 7 | Soundness (Le Chatelier's Method) | 1mm | Not more than 10 mm |

**Note:**

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CP/TF/01

## TEST REPORT OF PHYSICAL PROPERTIES OF CEMENT - 53 Grade

**Lab ID** : **CP-2017-06-26-11**

**Date: 24-07-2017**

**Customer** : Executive Engineer, Project Division, Yelahanka Zone, BBMP, Bangalore.

**Address** : Yelahanka Sub Division, BBMP, Bangalore.

**Project Name** : Providing Structural roof covering (By space frames) over gallery to Hoysala play ground behind Yelahanka New town Bus stand in Ward no.04

**Agency** : H. V. Onkarappa, #27, Taralabalu Enclave, Near Police Station, Bangalore-64

**Customer's Reference** : EE(Project)/Ynk Zone/WO/35/16-17

**Source of Sample** : Sample supplied by Agency

**Sample Condition** : Satisfactory

**Date of Receipt** : 26-06-2017

**Sample ID No** : 2017-06-26-11/01

**Sample Type** : Birla Super 53grade

**Reference to BIS codes** : IS 12269 : 2013, 53 Grade Ordinary Portland cement Specification ,
IS 4031 Part 4, Determination of Consistency of Standard Cement Paste, Clause 5
IS 4031 Part 6, Determination of Compressive Strength, Clause 6

**Date of test** : 26-06-2017

| Compressive Strength | | | |
|---|---|---|---|
| **Sl.No.** | **Physical properties** | **Results** | **Requirement as per IS 12269: 2013** |
| 1 | 3 Days | 27.5N/mm$^2$ | Not less than 27 N/mm$^2$ |
| 2 | 7 Days | 38.0N/mm$^2$ | Not less than 37 N/mm$^2$ |
| 3 | 28 Days | 55.0N/mm$^2$ | Not less than 53 N/mm$^2$ |

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CP/TF/01

## TEST REPORT ON COARSE AGGREGATES

| | | |
|---|---|---|
| **Lab ID** | : | **CP-2017-06-26-11** **Date: 29-06-2017** |
| **Customer** | : | Executive Engineer, Project Division, Yelahanka Zone, BBMP, Bangalore. |
| **Address** | : | Yelahanka Sub Division, BBMP, Bangalore. |
| **Project Name** | : | Providing Structural roof covering (By space frames) over gallery to Hoysala play ground behind Yelahanka New town Bus stand in Ward |
| **Agency** | : | H. V. Onkarappa, #27, Taralabalu Enclave, Near Police Station, Bangalore-64 |
| **Customer Reference** | : | EE(Project)/Ynk Zone/WO/35/16-17 |
| **Source of Sample** | : | Sample supplied by Agency |
| **Sample Condition** | : | Satisfactory |
| **Date of Receipt** | : | 26-06-2017 |
| **Sample ID No** | : | 2017-06-26-11-02 |
| **Sample Type/ Size** | : | 20mm down size coarse aggregate |
| **Reference to BIS codes** | : | IS: 383:2016 (Specification for Coarse and fine Aggregates )<br>IS: 2386 :1963(Part - 1,3,4) RA2011<br>IS 2386 Part 1: Particle Size and Shape<br>IS 2386 Part 3: Specific gravity, Density, Voids,Water Absorption<br>IS 2386 Part 4: Mechanical Properties |
| **Date of test** | : | 26-06-2017 |

**SIEVE ANALYSIS (PARTICLE SIZE DISTRIBUTION) OF 20MM DOWN COARSE AGGREGATE:**

**Total weight taken : 5000 grams**

| Sample No. | Sieve No. | Weight Retained in gms | Cumulative Weight Retained in gms | % Cumulative Weight Retained | % Passing | Required as per IS 383:2016 |
|---|---|---|---|---|---|---|
| 1 | 40 mm | 0 | 0 | 0 | 100 | 100 |
| 2 | 20 mm | 265 | 265 | 5.3 | 94.7 | 90-100 |
| 3 | 10 mm | 2635 | 2900 | 58.0 | 42.0 | 25-55 |
| 4 | 4.75 mm | 1756 | 4656 | 93.1 | 6.9 | 0-10 |
| 5 | Pan | 344 | 5000 | 100 | 0 | _ |



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## TEST REPORT ON COARSE AGGREGATES

**Lab ID** : **CP-2017-06-26-11** **Date: 29-06-2017**

**Sample ID No** : 2017-06-26-11-02

### PHYSICAL PROPERTIES

| Sl.no | Tests | Result | Requirements as per IS:383-2016 |
|---|---|---|---|
| 1 | Flakiness Index(%) | 12.3 | Combined Flakiness & Elongation Index Shall not Exceed 40% for Uncrushed & Crushed Aggregate |
| 2 | Elongation Index(%) | 11.6 | |
| 3 | Specific Gravity | 2.65 | – |
| 4 | Bulk Density(Loose) (Kg/l) | 1.56 | – |
| 5 | Bulk Density(Compacted) (Kg/l) | 1.59 | – |
| 6 | Water Absorption(%) | 0.25 | – |
| 7 | Aggregate crushing Value(%) | 23.5 | Max 30% for Aggregates to be used in concrete for wearing Surface, In case Aggregate Crushing Value Exceeds 30% then the test for ten percent fines should be conducted for Aggregates to be used in concrete other than for wearing Surface. |
| 8 | Aggregate Impact Value(%) | 22.8 | 30% for Aggregates to be used in concrete for wearing Surface, 45% for Aggregates to be used in concrete other than for wearing Surface. |

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**Quality Manager**



M : 9972924526 | Tel : +91 80 23444801 | e : rechan6630@yahoo.co.in, civilproexperts@gmail.com

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# TEST REPORT OF FINE AGGREGATE

**Lab ID** : **CP-2017-06-26-11** **Date: 29-06-2017**

**Customer** : Executive Engineer, Project Division, Yelahanka Zone, BBMP, Bangalore.

**Address** : Yelahanka Sub Division, BBMP, Bangalore.

**Project Name** : Providing Structural roof covering (By space frames) over gallery to Hoysala play

**Agency** : H. V. Onkarappa, #27, Taralabalu Enclave, Near Police Station, Bangalore-64

**Customer's Reference** : EE(Project)/Ynk Zone/WO/35/16-17

**Source of Sample** : Sample supplied by Agency

**Sample Condition** : Satisfactory

**Date of Receipt** : 26-06-2017

**Sample ID No** : 2017-06-26-11-03

**Sample Type** : Fine Aggregate

**Reference to BIS codes** : IS 383 : 2016 (Specification for Coarse and fine Aggregates)
IS: 2386 :1963(Part - 1, 3) RA2012
IS 2386 Part 1: Particle Size and Shape
IS 2386 Part 3: Specific gravity, Density, Voids,Water Absorption

**Date of test** : 26-06-2017

**Total weight taken** : 1000 grams

| Sl.no | Sieve Size | Weight Retained (gms) | Cumulative Weight Retained (gms) | % Cumulative Weight Retained | % Passing | Requirement as per IS 383:2016 | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Grading Zone I | Grading Zone II | Grading Zone III | Grading Zone IV |
| 1 | 10 mm | 0 | 0 | 0.0 | 100.0 | 100 | 100 | 100 | 100 |
| 2 | 4.75 mm | 86 | 86 | 8.6 | 91.4 | 90-100 | 90-100 | 90-100 | 95-100 |
| 3 | 2.36 mm | 154 | 240 | 24.0 | 76.0 | 60-95 | 75-100 | 85-100 | 95-100 |
| 4 | 1.18 mm | 142 | 382 | 38.2 | 61.8 | 30-70 | 55-90 | 75-100 | 90-100 |
| 5 | 600 micron | 166 | 548 | 54.8 | 45.2 | 15-34 | 35-59 | 60-79 | 80-100 |
| 6 | 300 micron | 187 | 735 | 73.5 | 26.5 | 5-20 | 8-30 | 12-40 | 15-50 |
| 7 | 150 micron | 175 | 910 | 91.0 | 9.0 | 0-10 | 0-10 | 0-10 | 0-15 |
| 8 | Pan | 90 | 1000 | 100.0 | 0.0 | --- | --- | --- | --- |

**Result :The tested Sample Conforms to Grading Zone II**



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# TEST REPORT OF FINE AGGREGATE

**Lab ID** : **CP-2017-06-26-11** **Date: 29-06-2017**

**Sample ID No** : 2017-06-26-11-03

**PHYSICAL PROPERTIES**

| Sl.no | Tests | Result | Requirements as per IS 383:2016 |
|---|---|---|---|
| 1 | Water Absorption(%) | 2.3 | – |
| 2 | Specific Gravity | 2.59 | – |
| 3 | Material finer than 75 micron(%) | 5.2 | Uncrushed fine Aggregate Max 3%, Crushed Fine aggregate Max 15%, Mixed Fine aggregate Max 12%, Manufactured Fine aggregate Max 10% |

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# TEST RESULTS OF STEEL

| | | |
|---|---|---|
| **Lab ID** | : | **CP-2017-06-28-02** |
| **Customer** | : | Assistant Executive Engineer, Yelahanka Sub Division, BBMP, Bangalore. |
| **Address** | : | Yelahanka Sub Division, BBMP, Bangalore. |
| **Project Name** | : | Providing Structural roof covering (By space frames) over gallery to Hoysala play ground behind Yelahanka New town Bus stand in Ward no.04 |
| **Agency** | : | H. V. Onkarappa, #27, Taralabalu Enclave, Near Police Station, Bangalore-64 |
| **Customer's Reference** | : | EE(Project)/Ynk Zone/WO/35/16-17 |
| **Source of Sample** | : | Sample supplied by Agency |
| **Sample Condition** | : | Satisfactory |
| **Date of Receipt** | : | 28-06-2017 |
| **Sample ID No** | : | 2017-06-28-02-01 |
| **Sample Type** | : | Sunvik Fe500 |
| **Reference to BIS codes** | : | IS 1786-2008, IS:1608-2005(RA 2011), IS 1599-2012. |
| **Date of test:** | : | 28-06-2017 |

**Date: 29-06-2017**

| Sl.No | Identification of sample | Grade of the sample | Diameter of the steel bar | Weight of the sample | Yield stress | Tensile strength | Elongation | Bend test | Rebend test |
|---|---|---|---|---|---|---|---|---|---|
| | | | (mm) | (kg/m) | (N/mm2) | (N/mm2) | (%) | | |
| 1 | Sunvik Fe500 | Fe500 | 8 | 0.392 | 542 | 672 | 20.0% | Satisfactory | Satisfactory |
| 2 | Sunvik Fe500 | Fe500 | 10 | 0.615 | 570 | 683 | 20.0% | Satisfactory | Satisfactory |
| 3 | Sunvik Fe500 | Fe500 | 16 | 1.580 | 595 | 686 | 19.0% | Satisfactory | Satisfactory |
| 4 | Sunvik Fe500 | Fe500 | 20 | 2.470 | 602 | 692 | 19.0% | Satisfactory | Satisfactory |
| 5 | Sunvik Fe500 | Fe500 | 25 | 3.850 | 612 | 694 | 18.5% | Satisfactory | Satisfactory |

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M : 9972924526 | Tel : +91 80 23444801 | e : rechan6630@yahoo.co.in, civilproexperts@gmail.com
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# TEST REPORT OF CEMENT CONCRETE CUBES

**Lab ID** : **CP-2017-07-10-07**

**Date: 11/07/2017**

**Customer** : Assistant Executive Engineer, Yelahanka Sub Division, BBMP, Bangalore.

**Address** : Yelahanka Sub Division, BBMP, Bangalore.

**Project Name** : Providing Structural roof covering (By space frames) over gallery to Hoysala play ground behind Yelahanka New town Bus stand in Ward no.04

**Agency** : H. V. Onkarappa, #27, Taralabalu Enclave, Near Police Station, Bangalore-64

**Customer's Reference** : EE(Project)/Ynk Zone/WO/35/16-17

**Source of Sample** : Sample supplied by Agency

**Sample Condition** : Satisfactory

**Date of Receipt** : 10-07-2017

**Sample ID No** : 2017-07-10-07-01

**Customer ID** : Column Concrete

**Sample Type /Size** : 150X150X150 mm

**Sample grade/Age** : M20 / 7 Days Compressive Strength

**Reference to BIS codes** : IS: 516 - 1959 Methods of Tests for Strength of Concrete Cl.5

**Date of test** : 11/07/2017

| Sl. No. | Identification Mark | Grade of concrete | Date of Casting | Date of Testing | Dimension of the Specimen (mm) | Cross sectional area (Sq.mm) | Weight of the sample (kg) | Failure Load (KN) | Compressive strength ($N/mm^2$) | Average Compressive Strength ($N/mm^2$) |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Column Concrete | M20 | 04/07/2017 | 11/07/2017 | 150.36 X 150.44 X 150.35 | 22620 | 8.241 | 416.2 | 18.4 | 18.2 |
| 2 | Column Concrete | M20 | 04/07/2017 | 11/07/2017 | 150.38 X 150.44 X 150.45 | 22623 | 8.281 | 405.0 | 17.9 | |
| 3 | Column Concrete | M20 | 04/07/2017 | 11/07/2017 | 150.32 X 150.34 X 150.35 | 22599 | 8.236 | 415.8 | 18.4 | |

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# TEST REPORT OF CEMENT CONCRETE CUBES

**Lab ID** : **CP-2017-07-10-07**

**Date: 01/08/2017**

**Customer** : Assistant Executive Engineer, Yelahanka Sub Division, BBMP, Bangalore.

**Address** : Yelahanka Sub Division, BBMP, Bangalore.

**Project Name** : Providing Structural roof covering (By space frames) over gallery to Hoysala play ground behind Yelahanka New town Bus stand in Ward no.04

**Agency** : H. V. Onkarappa, #27, Taralabalu Enclave, Near Police Station, Bangalore-64

**Customer's Reference** : EE(Project)/Ynk Zone/WO/35/16-17

**Source of Sample** : Sample supplied by Agency

**Sample Condition** : Satisfactory

**Date of Receipt** : 10-07-2017

**Sample ID No** : 2017-07-10-07-02

**Customer ID** : Column Concrete

**Sample Type /Size** : 150X150X150 mm

**Sample grade/Age** : M20 / 28 Days Compressive Strength

**Reference to BIS codes** : IS: 516 - 1959 Methods of Tests for Strength of Concrete Cl.5

**Date of test** : 01/08/2017

| Sl. No. | Identification Mark | Grade of concrete | Date of Casting | Date of Testing | Dimension of the Specimen (mm) | Cross sectional area (Sq.mm) | Weight of the sample (kg) | Failure Load (KN) | Compressive strength ($N/mm^2$) | Average Compressive Strength ($N/mm^2$) |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Column Concrete | M20 | 04/07/2017 | 01/08/2017 | 150.32 X 150.34 X 150.35 | 22599 | 8.255 | 485.9 | 21.5 | 21.3 |
| 2 | Column Concrete | M20 | 04/07/2017 | 01/08/2017 | 150.29 X 150.27 X 150.35 | 22584 | 8.241 | 483.3 | 21.4 | |
| 3 | Column Concrete | M20 | 04/07/2017 | 01/08/2017 | 150.30 X 150.35 X 150.25 | 22598 | 8.273 | 472.3 | 20.9 | |

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CP/TF/01

# TEST REPORT OF CEMENT CONCRETE CUBES

**Lab ID** : **CP-2017-07-10-07** **Date: 13/07/2017**

**Customer** : Assistant Executive Engineer, Yelahanka Sub Division, BBMP, Bangalore.

**Address** : Yelahanka Sub Division, BBMP, Bangalore.

**Project Name** : Providing Structural roof covering (By space frames) over gallery to Hoysala play ground behind Yelahanka New town Bus stand in Ward no.04

**Agency** : H. V. Onkarappa, #27, Taralabalu Enclave, Near Police Station, Bangalore-64

**Customer's Reference** : EE(Project)/Ynk Zone/WO/35/16-17

**Source of Sample** : Sample supplied by Agency

**Sample Condition** : Satisfactory

**Date of Receipt** : 10-07-2017

**Sample ID No** : 2017-07-10-07-03

**Customer ID** : Column Concrete

**Sample Type /Size** : 150X150X150 mm

**Sample grade/Age** : M20 / 7 Days Compressive Strength

**Reference to BIS codes** : IS: 516 - 1959 Methods of Tests for Strength of Concrete Cl.5

**Date of test** : 13/07/2017

| Sl. No. | Identification Mark | Grade of concrete | Date of Casting | Date of Testing | Dimension of the Specimen (mm) | Cross sectional area (Sq.mm) | Weight of the sample (kg) | Failure Load (KN) | Compressive strength ($N/mm^2$) | Average Compressive Strength ($N/mm^2$) |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Column Concrete | M20 | 06/07/2017 | 13/07/2017 | 150.61 X 149.74 X 150.39 | 22552 | 8.327 | 374.4 | 16.6 | 16.9 |
| 2 | Column Concrete | M20 | 06/07/2017 | 13/07/2017 | 151.29 X 150.44 X 150.95 | 22760 | 8.299 | 382.4 | 16.8 | |
| 3 | Column Concrete | M20 | 06/07/2017 | 13/07/2017 | 151.25 X 151.34 X 150.35 | 22890 | 8.324 | 396.0 | 17.3 | |

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CP/TF/01

# TEST REPORT OF CEMENT CONCRETE CUBES

**Lab ID** : **CP-2017-07-10-07** **Date: 03/08/2017**

**Customer** : Assistant Executive Engineer, Yelahanka Sub Division, BBMP, Bangalore.

**Address** : Yelahanka Sub Division, BBMP, Bangalore.

**Project Name** : Providing Structural roof covering (By space frames) over gallery to Hoysala play ground behind Yelahanka New town Bus stand in Ward no.04

**Agency** : H. V. Onkarappa, #27, Taralabalu Enclave, Near Police Station, Bangalore-64

**Customer's Reference** : EE(Project)/Ynk Zone/WO/35/16-17

**Source of Sample** : Sample supplied by Agency

**Sample Condition** : Satisfactory

**Date of Receipt** : 10-07-2017

**Sample ID No** : 2017-07-10-07-04

**Customer ID** : Column Concrete

**Sample Type /Size** : 150X150X150 mm

**Sample grade/Age** : M20 / 28 Days Compressive Strength

**Reference to BIS codes** : IS: 516 - 1959 Methods of Tests for Strength of Concrete Cl.5

**Date of test** : 03/08/2017

| Sl. No. | Identification Mark | Grade of concrete | Date of Casting | Date of Testing | Dimension of the Specimen (mm) | Cross sectional area (Sq.mm) | Weight of the sample (kg) | Failure Load (KN) | Compressive strength ($N/mm^2$) | Average Compressive Strength ($N/mm^2$) |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Column Concrete | M20 | 06/07/2017 | 03/08/2017 | 149.25 X 150.74 X 150.61 | 22498 | 8.245 | 477.0 | 21.2 | 21.6 |
| 2 | Column Concrete | M20 | 06/07/2017 | 03/08/2017 | 150.91 X 150.66 X 151.52 | 22736 | 8.241 | 491.1 | 21.6 | |
| 3 | Column Concrete | M20 | 06/07/2017 | 03/08/2017 | 150.38 X 151.55 X 150.32 | 22790 | 8.228 | 499.1 | 21.9 | |

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